

REMARKS

In response to the Office Action mailed February 9, 2005, Applicant respectfully requests reconsideration. Claims 1-4 were previously pending in this application. No claims have been amended. New claims 5-8 have been added. As a result, claims 1-8 are pending for examination with claims 1 and 5 being independent. The application is believed to be in condition for allowance.

As a preliminary matter, Applicant notes with appreciation the indication of allowable subject matter in claim 4.

Rejections Under 35 U.S.C. §103

The Office Action rejects claims 1-3 under 35 U.S.C. §103(a) as purportedly being unpatentable over Pezzani, U.S. Patent No. 5,608,235 (Pezzani '235) in view of Pezzani, U.S. Patent No. 5,889,374 (Pezzani '374).

The Office Action asserts Pezzani '235 discloses a voltage controlled monolithic bidirectional switch with first and second main terminals with a substrate having an upper and lower surface, a lateral PMOS including source and drain, a vertical NMOS including a source well, the source well of the vertical transistor disposed in the substrate including the source and drain and the first region formed in the drain, a first vertical thyristor in the substrate with a first polarity including the polarity of the lateral transistor and second, third and forth regions, the second thyristor in the substrate with a second polarity opposite to the first thyristor, the second thyristor disposed in parallel with the first vertical thyristor, the second and third regions of the first vertical thyristor and a fifth region corresponding to the source well of the vertical NMOS, the fifth region defining a first end of the second vertical thyristor and third region defining a second end of the second vertical transistor, first main terminal/electrode coupled to the first end of the first vertical thyristor and first end of the second thyristor and second main terminal/electrode coupled to the second end of the first and second vertical thyristor. The Office Action concedes that Pezzani '235 fails to disclose the required extension structure. However, the Office Action asserts Pezzani '374 discloses a thyristor control switch for a bidirectional motor where the required electrode/metallization/electrode structure is disclosed. The Office Action concludes that it would have been obvious to one having ordinary skill in the

art at the time the invention was made to include the required metallization/electrode extension in Pezzani '235, as taught by Pezzani '374, in order to have a voltage controlled bidirectional switch with increased performance.

Applicant respectfully traverses this rejection.

Discussion of Cited References:

Pezzani '235 describes a voltage-controlled power monolithic bidirectional switch. The device illustrated by Pezzani '235 in figures 4A and 4B contains three p-type wells with two of the three p-type wells each containing one n-type region, and a gate terminal connected to two of the three p-type wells. Figures 5A and 5B show a device containing three p-type wells with two of the three p-type wells each containing one n-type region, while the third p-type well contains two n-type regions, and a gate terminal connected to two of the three p-type wells.

Pezzani '374 describes an on/off switching component of a motor powered according to a first or second polarity, connected in series with the motor. In figure 5, the device illustrated by Pezzani '374 contains an elongated n-type region on a lower surface. Pezzani '374 does not teach or suggest an elongated n-type region increasing the performance of the device. Pezzani '374 also does not teach nor suggest the elongated n-type region used as an electrode for a thyristor.

The Combination of Pezzani '235 and Pezzani '374 is Improper:

As discussed above, Pezzani '374 does not teach or suggest an elongated n-type region, or extension structure, increasing the performance of the device. Therefore one of ordinary skill in the art would not have been motivated to incorporate the teachings of Pezzani '374 with the teachings of Pezzani '235 since the teaching relied upon by the Office Action is not found in Pezzani '374.

The Claims Patentably Distinguish over the Combination of Pezzani '235 and Pezzani '374:

Even if Pezzani '235 and Pezzani '374 were combined in the manner alleged by the Office Action (which Applicant does not concede), the claims still patentably distinguish over any such combination.

Claims 1-4:

Claim 1 is directed towards a voltage-controlled monolithic component of triac type, formed in a substrate of a first conductivity type, including first and second vertical thyristors, a first main electrode of the first thyristor, on a front surface side of the component, corresponding to a first region of a first conductivity type formed in a first well of a second conductivity type, said first well corresponding to a first main electrode of the second thyristor, the first well containing a second region of the first conductivity type, and a pilot structure including, on the front surface side, above an extension of a second main electrode region of the second thyristor, a second well of the second conductivity type containing third and fourth regions of the first conductivity type, the third region and a portion of the second well being connected to a gate terminal, the fourth region being connected to the second region.

Claim 1 patentably distinguishes over the combination of Pezzani '235 and Pezzani '374 for at least two reasons.

First, the combination of references does not teach or suggest a device comprising of two wells of a first conductivity type, the first well having a first and second region of a second conductivity type, and the second well having a third and fourth region of a second conductivity type, wherein the fourth and second region is connected, as required in claim 1.

Second, the combination of references does not teach nor suggest an extension of a second main electrode region of the second thyristor. Pezzani '374 instead teaches an elongated n-type region which is not used as an electrode.

Claims 2-4 depend from claim 1 and patentably distinguish over any combination of Pezzani '235 and Pezzani '374 for at least the same reasons.

Claims 5-8:

Claim 5 is directed towards a voltage-controlled monolithic component of triac type, formed in a substrate of a first conductivity type comprising a first well of a second conductivity type comprising a first and second region of the first conductivity type, a pilot structure comprising a second well of the second conductivity type and a third and fourth region of the first conductivity type, wherein the third region and a portion of the second well are connected to

a gate terminal, and wherein the second region and fourth region are connected, and a first thyristor comprising a first main electrode corresponding to the first region and a second thyristor comprising a first main electrode corresponding to the first well, wherein an extension of a second main electrode of the second thyristor is located below the pilot structure.

As should be appreciated from the above discussion relating to claim 1, the combination of references does not teach nor suggest a first well of a second conductivity type comprising a first and second region of the first conductivity type and a second well of the second conductivity type and a third and fourth region of the first conductivity type, wherein the second region and fourth region are connected, as required by claim 5. Furthermore, the combination of references does not teach nor suggest an extension of a second main electrode of the second thyristor, as is also required by claim 5.

Claims 6-8 depend from claim 5 and patentably distinguish over any combination of Pezzani '235 and Pezzani '374 for at least the same reasons.

CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
Jean-Michel Simmonet, Applicant

By: 

James H. Morris, Reg. No. 34,681
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
Telephone: (617) 646-8000

Docket No.: S1022.80949US00
Date: August 9, 2005
x08/09/05x